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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,400	01/29/2001	Takayoshi Sasaki	202337US0	6177

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ALEXANDRIA, VA 22314

EXAMINER

AHMED, SHEEBA

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/770,400

Applicant(s)

SASAKI ET AL.

Examiner

Sheeba Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 2/24/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1, 2 and 4-16 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1, 2, 4, and 6-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendments to claims 1 and 5 have been entered in the above-identified application. Claim 3 has been cancelled. New claims 6-16 have been added. **Claims 1, 2, and 4-16 are now pending.**

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1-4 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that only the claimed method is suitable and effective in the preparation of the multilayer thin film of the elected claims and no other known method can provide such a structure. This is not found persuasive because the Applicants admit on Page 1 of the Specification (see lines 15-19) that titania thin films may be conventionally prepared by coating the surface of a substrate with a titian sol by means of spin coating.

The requirement is still deemed proper and is therefore made FINAL. Hence, **claims 5 and 9-16 are withdrawn from consideration.**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US 5,935,717).

Oishi et al. disclose a functional film (***corresponding to the multilayer ultrathin film of the claimed invention***) produced by forming an inorganic thin film on an organic film wherein the inorganic thin film may have an antistatic function, a photocatalytic function, and/or a light reflectance changing function (Column 1, lines 7-10). Dispersed particles of titanium oxide may be used to form the inorganic thin film (***corresponding to the layer of lamina particles of the claimed invention and meeting the limitations of claims 2***) wherein the particles have a particle size of 500 angstroms or less (***thus meeting the limitation that the thickness of the layers is within a range of sub-nm to nm and meeting the limitations of claims 6 and 7***) (Column 5, lines 6-44). The organic film may be polyethylene terephthalate (***corresponding to the polymer layer of the claimed invention***) (Column 6, lines 13-16). To produce a film capable of exhibiting a photofunction such as an antireflection film, multiple inorganic films may be formed on the surface of the organic film (Column 3, lines 57-61). Embodiment 1 indicates that the thickness of the inorganic thin film may be 800 to 1000 angstroms. Oishi et al. do not specifically state that their functional film comprises alternating layers of the polymer and the titanium oxide particles. However, it would have been obvious to use multiple alternating layers of the polymer and the titanium oxide to obtain a specific amount of photofunction such as antireflection particularly given that Oishi et al. teach that multiple inorganic layers may be used to produce a film capable of exhibiting a photofunction such as an antireflection. With

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regards to the limitations of claim 4, the Examiner takes the position that the film disclosed by Oishi et al. must inherently absorb UV light having a wavelength of at most 300 nm given that the chemical composition of the polymer layer and the lamina layer as disclosed by Oishi et al. is identical to that of the claimed thin film.

Response to Arguments

4. Applicant's arguments filed on February 24, 2003 (Paper No. 6) have been fully considered but they are not persuasive. Applicants traverse the rejection of claims 1, 2, and 4 under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. (US 5,935,717) and submit that the fine particles in Oishi et al. are homogenously dispersed in the inorganic thin film and are not alternating layers of lamina particles and layers of a polymer. However, the Examiner disagrees and would like to point out that Oishi et al. specifically teach that a functional film produced by forming an inorganic thin film on an organic film wherein the inorganic thin film may have an antistatic function, a photocatalytic function, and/or a light reflectance changing function and wherein dispersed particles of titanium oxide may be used to form the inorganic thin film ***(corresponding to the layer of lamina particles of the claimed invention and meeting the limitations of claims 2)*** wherein the particles have a particle size of 500 angstroms or less which is layered with an organic film made of polyethylene terephthalate ***(corresponding to the polymer layer of the claimed invention)***. In essence, the Examiner has taken the position that the inorganic thin film is the lamina particle layer and that the organic film is the polymer layer. The claimed lamina layer

does not preclude the presence of a polymer in the lamina layer. Furthermore, the Examiner has taken the position that it would have been obvious to use multiple alternating layers of the polymer and the titanium oxide to obtain a specific amount of photofunction such as antireflection particularly given that Oishi et al. teach that multiple inorganic layers may be used to produce a film capable of exhibiting a photofunction such as an antireflection.

Applicants further argue that the Oishi et al. do not teach fine particles of a size ranging from sub-nm to nm, specifically 0.5 to 2nm as recited in claims 6 and 7.

However, the Examiner would like to point out that Oishi et al. specifically teach titanium oxide particles having a particle size of 500 angstroms or less and thus meeting the range of sub-nm to nm and meeting the limitations of claims 6 and 7.

Hence, the above rejection is maintained.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mondays and Thursdays from 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.



Sheeba Ahmed
May 15, 2003



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700